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A study committee report on the following types of financial support for university research: Indirect intramural support; direct intramural support of general research; direct support of organized research; financial support for organized research units; use of overhead funds for intramural research; financial support of graduate students. Presents 10 recommendations.

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REPORT OF STUDY COMMITTEE NO. 2

John T. Middleton, *Chairman;* Esmond E. Snell, *Vice-Chairman;* Robert W. Allard, Gustaf O. S. Arrhenius, John E. Cushing, Peter H. Forsham, Donald B. Lindsley, Wilfried F. H. M. Mommaerts, Ernest Tuveson

HE7411

FINANCIAL SUPPORT FOR UNIVERSITY RESEARCH

Financial support for research in the University is divided into two types: general and organized. General research is typically associated with teaching and related functions, and is financed from regular departmental budgets; organized research is specifically oriented, and is financed from special funds. Although State funds supply much of the financial support for general research, the amounts for organized research are limited, particularly in some fields, and the investigator must usually procure his own support—from limited intramural funds and from more readily available extramural sources.

The distribution of financial support by research fields and campuses, the assignment of direct intramural research funds by research committees, and the financial support of graduate students, all illustrate the paucity of intramural funds for research and the need to increase this support, both in the absolute sense and in proportion to campus growth.

I

Indirect Intramural Support

The University aids research in a number of ways that do not appear as direct research costs in its budgetary accounts. The University carries most of the academic staff on its salary roll, and academic personnel have varying amounts of time free for research, depending upon their respective fields of interest. The University supplies capital facilities and some maintenance, thereby providing an environment conducive to and suitable for research. The University, through academic tradition and the provision of a stable operating base, affords a continuous incentive to research.

The portion of the general budget that supports research in this indirect but basic manner is variously estimated at 20 to 30 per cent of the teaching and general research budget of approximately 45 million dollars, or about 11 million dollars yearly. As shown in Table 1, this sum is less than one-third the amount provided by organized research funds. Although these basic contributions of the University provide faculty members with time and space to carry out their research, they do not by themselves permit research commensurate with the expectations of the University and the potentialities of the individual staff members. Thus additional funds earmarked for research are necessary.

Expenditures for organized research in comparison with expenditures for teaching, administration, and general research are, on a percentage basis, smaller than the percentages at Stanford University and the California Institute of Technology but are in line with those at other state universities for which figures were available. In addition, provision of time and space for research by indirect means falls short of supplying such needs in modern research as libraries, laboratory equipment, technical assistance, etc. Further financial aid from direct sources of support must thus be made available.

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TABLE 1

COMPARATIVE EXPENDITURES FOR ORGANIZED RESEARCH AND OTHER PURPOSES FOR SEVERAL EDUCATIONAL INSTITUTIONS*

Institution	Educational, Administrative, and General Research Expenditures	Organized Research	Organized Research, Per cent of total
University of California	$143,216,963	$39,262,257	21
California Institute of Technology	2,912,000	12,108,151†	81*
Stanford University	20[illegible]2,123	7,859,629	27
Purdue University	26,805,418	6,780,261	20
Oklahoma State University	13,943,241	3,193,670	19
University of Illinois	65,785,072	14,102,183	18
University of Minnesota	52,854,326	9,156,999	15

* For fiscal year 1957–1958 for institutions other than the University of California; 1958–1959 for the University of California.
† Excludes $39,000,000 for Jet Propulsion project.

II

Direct Intramural Support of General Research

Money for research that is directly allocated from the University budget is, for most fields, distributed to the faculty through research committees on each campus. These budgets are of special interest to the present Conference in that they are the only funds available for direct support of research that are not derived from extramural sources. They have the great advantage that they are controlled by the faculty through the Senate; they form a nucleus for self-sufficiency within the University should extramural money be withdrawn. Further, and of great importance, these funds offer an available source to faculty members whose research lies in areas, such as the humanities, where extramural support appears to be scarce.

Unfortunately, these direct intramural funds are decidedly inadequate. This inadequacy is inconsistent with the proper demand of the University that its faculty members excel in creative effort as well as in teaching. The extent of the inadequacy may be illustrated in several ways:

1. The dollars per capita available to each campus are very few (see Table 2).

2. The knowledge that funds are so limited has discouraged applications from many faculty members.

3. If funds were available and rules were liberalized to permit it, the committee would be able to consider grants to selected individuals on sabbatical leave for augmentation of salaries, thus permitting full-time prosecution of their research. Funds are now inadequate for this purpose.

4. Funds are now insufficient to permit adequate travel allowances for research purposes such as for travel to sabbatical headquarters or overseas travel justified by research needs.

The present system of granting Presidential Fellowships to subsidize research in the summer is an admirable use of intramural research funds, and should be expanded. Present restriction of eligibility for these fellowships to instructors and assistant professors should be changed to permit a faculty member to receive one such grant during his non-tenure status and one or more following his appointment to a tenure position.

Finally, the Committee re-emphasizes the great disparity between the University's concept of its leadership in research and the intramural funds that should assist in sustaining this leadership, particularly in areas of ideas or activities for which extramural funds are not easily obtained.

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TABLE 2

INTRAMURAL RESEARCH FUNDS ALLOCATED BY THE RESEARCH COMMITTEES 1958–1959

Campus	Allotment	Senate Members	Dollars per Senate Member
Berkeley and Mount Hamilton	$296,602	1,132	$262
Davis	20,765	316	67
Los Angeles and La Jolla	259,015	949	274
Riverside	16,637	106	159
San Francisco	22,500	225	100
Santa Barbara	15,569	191	81
Total	$631,138	2,919	Average: $158

III

Direct Support of Organized Research

The magnitude and sources of support for organized research during fiscal 1958–1959 are shown in Table 3.

The distribution shown in Tables 3 and 4 considers the "State" category to include

TABLE 3

RELATIVE DISTRIBUTION OF SUPPORT FOR ORGANIZED RESEARCH AMONG STATE, FEDERAL, AND PRIVATE FUNDS AT THE UNIVERSITY OF CALIFORNIA—FISCAL YEAR 1958–1959

State	$15,961,749
Federal	16,900,686
Private	6,399,822
Total	$39,262,257

all money appropriated by the State and also all money from other general revenues of the University assigned by the University for general research purposes. A portion of this is usually distributed by academic research committees, as enumerated in Table 2. More than 80 per cent of the funds in this category originate from the State of California. Federal and private funds are usually limited by the donors to specific projects or research uses.

It may be noted that Federal support of organized research exceeds State support by nearly one million dollars a year. Private donations, at one time a major source of extramural funds, are now less than one-half of the State or Federal support. Among the major branches of the federal government that provide this research support are the National Institutes of Health, the Atomic Energy Commission, the Department of Agriculture, the National Aeronautics and Space Administration, the various branches of the armed forces, and the National Science Foundation. Of the 5,000-odd private foundations in existence (see W. S. Rich, *American Foundations Information Service,* New York, 1955), only a relatively few of the larger ones—such as the Rockefeller, Ford, and Kellogg foundations, The Commonwealth Fund, and the Carnegie Corporation—appear to provide large research grants.

The magnitude of support of various fields of research from these different sources is shown in Table 4. For the purposes of this table, engineering is considered with the physical sciences, and medicine, psychology, agriculture, and health sciences are included with the life sciences.

Table 4 shows that direct support for research is not nearly so great in the social sciences and humanities as in the natural sciences. Since most of this already limited support is given to the social sciences rather than to the humanities, a considerable increase for the latter would seem highly desirable.

Two remarks of a general nature remain to be made. On the one hand, we consider

TABLE 4

SUPPORT OF ORGANIZED RESEARCH AT THE UNIVERSITY OF CALIFORNIA BY FIELDS
1958–1959 FISCAL YEAR

	Total	State	Federal	Private
Physical Sciences				
Statewide	$ 327,596	$ 310,103	$ 7,302	$ 10,191
Berkeley	4,644,099	900,488	3,295,043	448,568
Los Angeles	2,101,049	466,232	1,409,631	225,186
San Francisco	.....	.....	.....	.....
Davis	585,379	384,630	169,427	31,322
Riverside	57,612	8,979	32,851	15,782
Santa Barbara	17,835	2,695	8,151	6,989
La Jolla	2,705,267	581,707	2,055,112	68,448
Total	$10,438,837	$ 2,654,834	$ 6,977,517	$ 806,486
Life Sciences				
Statewide	$ 654,665	$ 519,182	$ 117,384	$ 18,099
Berkeley	5,599,881	2,317,996	2,073,866	1,208,019
Los Angeles	4,907,123	1,095,490	2,769,059	1,042,574
San Francisco	3,710,127	571,127	2,243,592	895,408
Davis	5,498,059	3,718,936	1,405,283	373,840
Riverside	2,719,539	2,291,188	47,890	380,461
Santa Barbara	22,359	3,061	18,590	708
La Jolla	1,588,639	502,075	823,432	263,132
Total	$24,700,392	$11,019,055	$ 9,499,096	$4,182,241
Humanities and Social Sciences				
Statewide	$ 907,737	$ 806,940	$ 27,461	$ 73,336
Berkeley	2,022,326	939,703	172,040	910,583
Los Angeles	944,033	357,431	189,340	397,262
San Francisco	.....	.....	.....	.....
Davis	220,885	174,891	33,728	12,266
Riverside	7,486	4,158	1,504	1,824
Santa Barbara	20,561	4,737	.....	15,824
La Jolla	.....	.....	.....	.....
Total	$ 4,123,028	$ 2,287,860	$ 424,073	$1,411,095
Total of Fields by Funds				
Physical Sciences	$10,438,837	$ 2,654,834	$ 6,977,517	$ 806,486
Life Sciences	24,700,392	11,019,055	9,499,096	4,182,241
Humanities and Soc. Sci.	4,123,028	2,287,860	424,073	1,411,095
Total	$39,262,257	$15,961,749	$16,900,686	$6,399,822

it imperative that all research activities sponsored by federal and private agencies remain firmly under the University's academic control. On the whole there seem to be no issues or complaints here, but vigilance is needed especially when ambitious foundations or personalities seek to establish research programs or institutes in the University. Secondly, we believe it to be of national interest to turn away from the trend toward fractioned and detailed project support, with all its possible restrictions and its out-of-proportion administrative burden, and to move toward more sweeping forms of support of the whole University, of broad programs of its institutes and departments, and of persons of proven creative leadership.

IV

Financial Support for Organized Research Units

Whatever their academic merits, interdisciplinary research units provide an excellent mechanism for attracting extramural funds that can provide certain of the faculty with both time and support for their creative endeavors. All such units must be under the control of the Academic Senate; this control minimizes diversion of faculty and of University facilities into restricted and limited research. Key positions in such research units, both academic and nonacademic, should be carried on the University budget to assure stability and University control, and to serve as a nucleus for further expansion with outside support where this is deemed advisable.

V

Use of Overhead Funds for Intramural Research

Overhead charges are made on some extramural research funds, ranging from 0 to 35 per cent, all of which is now taken by the University administration. We roughly estimate these overhead charges to amount to four million dollars per year, of which approximately 1.25 million dollars are available for all-campus use. However, none of this overhead is directly available to the principal investigator, although he is responsible for detailed budgeting and clerical procedures associated with his research support. While the aggregate overhead costs to the University may be substantial, a small fraction of these sums would cover immediate administrative costs. There could be no better use for part of the remainder than to employ it for assuring a well-balanced growth of the general standard of scholarly activities. An excellent mechanism for ensuring this would be to augment funds available to the research committees for distribution to the faculty. We endorse in general the resolution adopted at the Thirteenth All-University Conference (1958 *Proceedings*, p. 55) that certain parts of this overhead be assigned to the departments, and other parts to the research committees, for disbursement as research grants for which individual faculty members can apply. Certain parts could also be assigned to the libraries, and establishment of a reserve research endowment could likewise be considered.

VI

Financial Support of Graduate Students

At a time of a rapidly increasing undergraduate population, the reservoir of graduate students is bound to increase. The proper development of this pool of trained personnel becomes critical to our national survival. Every effort must be made to develop as many teachers as possible from among this group so as to furnish academic personnel for the future. Most advanced degrees require research; hence research funds should be used in part for this all-important function. Graduate enrollments at several campuses in 1959 were as follows: (July) Berkeley, 5,953; San Francisco, 1,192; (March) Davis, 602. Table 5 provides incomplete information concerning financial support of these students at Berkeley. No information for the other campuses could be obtained.

The committee could not ascertain the extent to which these figures represent actual support available for graduate stu-

TABLE 5

DISTRIBUTION OF FINANCIAL SUPPORT FOR GRADUATE STUDENTS ON THE BERKELEY CAMPUS

	Total	Amount	Physical Sciences	Life Sciences	Humanities and Social Sciences
Fellowships	240	$ 279,745	68	38	134
Grants-in-Aid	184	424,396	11	91	82
Research Assistants, Teaching Assistants, Section Assistants	1,128	2,049,736	378	230	520
Total	1,552	$2,753,877	457	359	736

dents. The figures represent simply salary disbursement to graduate students through the accounting office on an FTE basis, multiplied by 2. They do not include support received directly from extra-University fellowships, etc.; such figures were not available through the Graduate Division. The Committee recommends that steps be taken to obtain the above information, particularly in view of the increasing emphasis on graduate work. The changed emphasis will materially alter the employment opportunities for teaching and research assistants.

On the basis of these incomplete figures, the conclusion seems warranted that graduate student support is not now optimal. In view of the importance of maintaining an adequate pool of qualified graduate students, and the value of resident postdoctoral fellows, an increase in financial support available for support of these groups would appear warranted.

VII
Recommendations

Based on the foregoing discussion, the following recommendations are submitted for consideration of the Conference:

1. Direct intramural research funds available through the research committees should be substantially increased.

2. Rules governing the allocation of funds by research committees should be liberalized to permit:

a. Augmentation of sabbatical salaries to selected applicants to permit full-time prosecution of research during sabbatical leave.

b. Payment of travel essential to successful prosecution of research, both in the United States and abroad.

3. The Presidential Fellowship program should be substantially increased and should include both nontenure and tenure faculty.

4. A substantial proportion of overhead charges from extramural research funds or their equivalent should be placed at the disposition of the research committees.

5. A portion of overhead charges should be returned to individual investigators and departments to defray the costs of administration of their research projects.

6. An administrative officer on each campus familiar with available sources of research support should be assigned to assist the faculty in securing funds for research.

7. Intramural financial support for graduate students should be increased and similar support should be provided for postdoctoral fellows.

8. The Graduate Division should keep records of all appointments of graduate students that carry remuneration, so that the true extent of present financial assistance to these students can be ascertained.

9. A study should be made of research needs in the nonscientific areas leading to proposals for more effective support of research in these areas.

10. Because of the unusual effectiveness of institutes, centers, and other organized research units in gathering funds required for research, their pros and cons should be investigated from the standpoint of their impact on the educational aims of the University, with a view toward placing the proper emphasis on such organizations in the University.

Summary of Discussion

Recording Secretaries: **Austin C. Hoggatt, Homer D. Swander**

A fruitful discussion developed on four major topics: the impact and relative magnitude of extramural financing of research in the University; the optimal use of overhead coming to the University with research grants; the allocation of funds to the various fields; and the relation of the magnitude of grants to their effect on a given field. The contribution of direct federal support to university research has been growing rapidly, and may double in the next three years. Government agencies, it was felt, no longer look upon support as planting seeds in research, but are determined to carry it on indefinitely. National committees on government research policy have envisaged six means of implementation: complete financing of buildings; provision of major items of equipment not directly related to teaching; payment of a portion of faculty members' salaries to free them for research; support of non-faculty research personnel; financing of research by graduate students; and allowance for a more realistic share of overhead costs. Also recommended are a relative reduction in government support for specific projects, and a relative increase in long-range grants to institutions, departments, and groups in order to assure continuity of research.

Certain dangers of federal support were then discussed. In warning of the risks of expanding research staffs for crash programs, a delegate stated that speaking as an obstetrician he was certain that once conception has taken place the process was not speeded up by putting more men on the job. Others feared that since extramural funds disproportionately go to senior faculty members, junior faculty members might be neglected. This might be remedied by an increase in funds available to the local research committees for general distribution. It was then pointed out that in some instances intramural research committees have been known to continue support on the basis of past performance rather than present need. Another problem is that by accepting large funds for research, the University might find itself forced into activities over which the faculty might have little or no control. To guard against this and other hazards, there is a need to establish some type of state-wide advisory coordinating committee. Such an agency should delineate scientific policies for the local research committees so as to preserve a sound orientation of research in the University. A further difficulty might arise from the increased federal funds for salaries in certain fields, which could make it more difficult to retain academic teachers on the usual University salaries. Finally, there were fears about special oaths that may be required for federal support.

Private sponsors of academic research also came in for criticism for their tendency to minimize basic research and to introduce program research of their own choosing. Foundations have manifested an increasing tendency to reject requests for small projects, and a propensity to go in for fads and fashions. A query concerning the desirability of starting institutes in order to attract money went unanswered. The establishment of statewide institutes open to faculty members from different campuses was also considered.

The diversion of overhead charges into

support for research received prolonged discussion. It was mentioned that in some universities a considerable portion of overhead was being transferred into research expenditures, and that this was thought to be highly commendable by donor agencies. It was pointed out that use of overhead might allow for the direct financing of centers on the campuses so that they could give service without recharges between departments. However, according to the terms of an agreement reached in 1956 between the State of California and the Regents, 50 per cent of the overhead is devoted to ordinary University expenses that are generally carried by the State of California, and 50 per cent is applied to self-liquidating capital improvements rather than to research support.

The strong support for the natural sciences from many sources was repeatedly contrasted with the relatively low research funds available to the humanities and social sciences. Fortunately, the National Institutes of Health and other agencies are prepared increasingly to support these latter areas. Since support in the humanities and social sciences is essentially that of individuals, provision for sabbatical leaves of absence with full pay was deemed highly desirable. However, it was noted that research in the social sciences increasingly requires expensive equipment, such as computers. The University should adopt the principle of supporting research in the humanities and social sciences intramurally to a greater extent than in other fields, in order partially to compensate for great differences in extramural support.

Finally, the tables presented in Report No. 2 came in for a number of revisions, along with a warning of possible misinterpretations. It was suggested that the tables by themselves might give an erroneous impression of imbalances in support for different research fields, since they have relatively different needs. Thus, the humanities generally do not need expensive equipment and therefore might not be as underprivileged as would appear from the tables. Moreover, inclusion of agricultural research funds with those of the life sciences in Table 4 accounts for the very large figure of more than eleven million dolars, thereby making expenditures in the humanities and social sciences appear very much smaller in comparison. Research support for faculty on small campuses, it was pointed out, would be even lower than shown in Table 2 if the figures had included only Senate members not eligible for support through funds of research institutes.